

"Express Mail" mailing label number EV 339 772 511 U.S.

Date of Deposit: October 3, 2003

Our Case No. 12282/3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
APPLICATION FOR UNITED STATES LETTERS PATENT

INVENTORS:

Mei-Chao TSAI
Kuo-Wei LEE

TITLE:

SEATBELT-ADJUSTING DEVICE

ATTORNEY:

Anastasia Heffner
BRINKS HOFER GILSON & LIONE
P.O. BOX 10395
CHICAGO, ILLINOIS 60610
(312) 321-4200

TITLE: SEATBELT-ADJUSTING DEVICE**BACKGROUND OF THE INVENTION****1. Field of the Invention**

The present invention relates to a seatbelt-
5 adjusting device that is adapted to be easily operated
and that is adapted to firmly retain a belt thereon.

2. Description of the Related Art

Referring to Figures 1 and 2, a conventional
seatbelt-adjusting device 100 is shown to include a
10 base member 10, an elongated belt-holding piece 12,
a positioning member 14, and a seatbelt 18.

As illustrated, the base member 10 has top and
bottom surfaces, and left and right sides extending
from the top surface to the bottom surface, and defines
15 an opening 101 that extends between the left and right
sides and that has left and right ends disposed
respectively adjacent to the left and right sides of
the base member 10, and front and rear ends.

The elongated belt-holding piece 12 is mounted
20 slidably on the top surface of the base member 10,
spans the left and right ends of the opening 101, and
is slidable on the top surface of the base member 10
between a rear position, in which, the belt-holding
piece 12 is disposed adjacent to the rear end of the
25 opening 101, as best shown in Figure 1, and a front
position, in which, the belt-holding piece 12 is
disposed adjacent to the front end of the opening 101,

as shown in Figure 2.

The seatbelt 18 has a looped portion inserted from the bottom surface of the base member 10 into the opening 101, and is sleeved on the belt-holding piece 12.

The positioning member 14 is mounted rotatably on the base member 10, is rotatable about a vertical axis perpendicular to the top surface of the base member 10 between a first position, in which, the positioning member 14 is spaced apart from the seatbelt-holding piece 12, as shown in Figure 1, so as to permit adjustment of the seatbelt 18 thereon, and a second position, in which, the positioning member 14 abuts against the seatbelt 18 and the seatbelt-holding piece 12, as best shown in Figure 2, when the seatbelt-holding piece 12 is moved to the front position.

One disadvantage of the aforesaid conventional seatbelt-adjusting device resides in that the seatbelt-holding piece 12 together with the belt 18 is not firmly retained by the positioning member 14 since the abutting area of the positioning member 14 relative to the seatbelt-holding piece 12 is relatively small.

SUMMARY OF THE INVENTION

Therefore, the object of this invention is to provide a seatbelt-adjusting device that is adapted to firmly retain a belt-holding piece together with

a belt on a frame unit so as to overcome the aforesaid disadvantage of the prior art.

According to the present invention, the seatbelt-adjusting device includes: a frame unit having top and bottom surfaces, and left and right sides that extend
5 from the top surface to the bottom surface, and defining an opening that extends between the left and right sides and that has left and right ends disposed respectively adjacent to the left and right sides of the frame unit, and front and rear ends; an elongated
10 belt-holding piece mounted slidably on the top surface of the frame unit, spanning the left and right ends of the opening, and slidable on the top surface of the frame unit between a rear position, in which, the
15 belt-holding piece is disposed adjacent to the rear end of the opening, and a front position, in which, the belt-holding piece is disposed adjacent to the front end of the opening; and a positioning member disposed rearwardly of the belt-holding piece, and
20 having left and right end portions and a bridge portion extending between and interconnecting the left and right end portions. The left and right end portions of the positioning member are respectively pivoted to the left and right sides of the frame unit so as to
25 be pivotable about a rotating axis parallel to the top surface of the frame unit between a first position, in which, the bridge portion of the positioning member

is spaced apart from the said belt-holding piece, and a second position, in which, the bridge portion of the positioning member abuts against the belt-holding piece when the belt-holding piece is disposed at the front position.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of this invention will become more apparent in the following detailed description of the preferred embodiment of this invention, with reference to the accompanying drawings, in which:

Figure 1 is a schematic top view illustrating a belt-holding piece of a conventional seatbelt-adjusting device at an adjustable position;

Figure 2 is a schematic top view illustrating the belt-holding piece of the conventional seatbelt-adjusting device at a non-adjustable position;

Figure 3 is an exploded perspective view of the preferred embodiment of a seatbelt-adjusting device according to the present invention;

Figure 4 is an assembled, perspective view of the preferred embodiment, illustrating how a belt-holding piece is secured relative to a frame unit;

Figure 5 is a cross sectional view of the preferred embodiment taken along lines V-V of Figure 4; and

Figure 6 is a cross sectional view of the preferred embodiment, illustrating how the belt-holding piece

is retained slidably on the frame unit.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Figures 3 and 4, the preferred embodiment of a seatbelt-adjusting device 500 according to the present invention is shown to include a frame unit 3, an elongated belt-holding piece 4, a positioning member 5, and a seatbelt 2.

As illustrated, the frame unit 3 has top and bottom surfaces, and left and right sides 301,302 extending from the top surface to the bottom surface, and defines an opening 310" that extends between the left and right sides 301,302 and that has left and right ends 3101,3102 disposed respectively adjacent to the left and right sides 301,302 of the frame unit 3, and front and rear ends 312,313.

The elongated belt-holding piece 4 is mounted slidably on the top surface of the frame unit 3, spans the left and right ends 3101,3102 of the opening 310", and is slidable on the top surface of the frame unit 3 between a rear position, in which, the belt-holding piece 4 is disposed adjacent to the rear end 313 of the opening 310", as best shown in Figure 6, and a front position, in which, the belt-holding piece 4 is disposed adjacent to the front end 312 of the opening 310", as best shown in Figure 4.

The seatbelt 2 has a looped portion inserted from the bottom surface of the frame unit 3 into the opening

310" in the frame unit 3 so as to be sleeved around the belt-holding piece 4.

5 The positioning member 5 is disposed rearwardly of the belt-holding piece 4, and has left and right end portions 54 and a bridge portion 55 extending between and interconnecting the left and right end portions 54. The left and right end portions 54 of the positioning member 5 are respectively pivoted to the left and right sides 301,302 of the frame unit 3 so as to be pivotable about a rotating axis 344 parallel to the top surface of the frame unit 3 between a first position, in which, the bridge portion 55 of the positioning member 5 is spaced apart from the belt-holding piece 4, as best shown in Figure 6, and in which, adjustment of the seatbelt 2 can be conducted, and a second position, in which, an abutting face 551 of the bridge portion 55 of the positioning member 5 abuts against the belt-holding piece 4 and the seatbelt 2, when the belt-holding piece 4 is disposed at the front position, as best shown in Figure 5. At this time, adjustment of the seatbelt 2 cannot be conducted.

25 In the preferred embodiment, the frame unit 3 includes a U-shaped base member 34, a mounting frame 31, and a rivet 33. The base member 34 has a rear portion 342 and left and right portions 341 extending frontwardly and respectively from two opposite ends

of the rear portion 342 to serve as the left and right sides 301,302 of the frame unit 3, respectively. The rear, left and right portions 342,341 define a recess 340 thereamong. The mounting frame 31 is fixed on the base member 34 via the rivet 33, and is formed with a through-hole 310 that is registered with the recess 340 in the base member 34. Under this condition, the through-hole 310 in the mounting frame 31 defines the opening 310" in the frame unit 3. The through-hole 310 in the mounting frame 31 is confined by a hole-defining wall 310W (see Fig. 3), has a large-width portion 315 adjacent to the rear portion 342 of the base member 34, and a small-width portion 311 with a width smaller than that of the large-width portion 315. The belt-holding piece 4 includes a sliding block 42 disposed slidably on the mounting frame 31 and spanning the through-hole 310, and two engaging legs 43 diverging downwardly from the sliding block 42, and extending through the through-hole 310 in the mounting frame 31 and into the recess 340 in the base member 34. The engaging legs 43 respectively have free ends that are spaced apart from each other by a width which is smaller than that of the large-width portion 315 of the through-hole 310 so as to permit mounting or removal of the belt-holding piece 4 from the mounting frame 31, and greater than that of the small-width portion 311 of the through-hole 310 so as to permit

retaining of the belt-holding piece 4 on the mounting frame 31 when the belt-holding piece 4 extends into the small-width portion 311 of the through-hole 310.

5 The base member 34 further has spaced apart stop elements 343 projecting from the rear portion 342 into the large-width portion 315 of the through-hole 310 in the mounting frame 31 to block respectively the engaging legs 43 of the sliding block 42 from entering into the large-width portion 315 when the sliding
10 block 42 is moved to the rear position so as to prevent untimely and undesired removal of the sliding block 42 from the mounting frame 31. The base member 34 is further formed with two pivots 344" which project oppositely and respectively from the left and right
15 portions 341 of the base member 34 into two pivot holes 541 in the left and right end portions 54 of the positioning member 5 and which cooperatively define the rotating axis 344 of the positioning member 5.

20 Preferably, the left and right end portions 54 of the positioning member 5 are formed with engaging grooves 542, respectively. The left and right portions 341 of the base member 34 are formed with engaging bosses 345 that respectively engage the engaging grooves 542 in the left and right end portions 54 of
25 the positioning member 5, thereby enhancing positioning of the sliding block 42 at the front position when the positioning member 5 is disposed at

the second position. The bridge portion 55 of the positioning member 5 is provided with a push tab 56 to facilitate turning of the same between the first and second positions.

5 Since the entire length of the bridge portion 55 of the positioning member 5 abuts against the belt-holding piece 4, the latter is retained securely when disposed at the front position. The object of the present invention is thus met.

10 With this invention thus explained, it is apparent that numerous modifications and variations can be made without departing from the scope and spirit of this invention. It is therefore intended that the invention be limited only as indicated in the appended claims.